

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number  
**WO 2004/050887 A3**

(51) International Patent Classification<sup>7</sup>: **C12P 7/02**

(21) International Application Number:  
PCT/CA2003/001849

(22) International Filing Date:  
28 November 2003 (28.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2,413,240 29 November 2002 (29.11.2002) CA

(71) Applicant (for all designated States except US): MCN  
BIOPRODUCTS INC. [CA/CA]; Suite 860, Saskatoon  
Square, 410, 22nd Street, East, Saskatoon, Saskatchewan  
S7K 5T6 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): NEWKIRK,  
Rex, W. [CA/CA]; 339 Haslam Crescent, Saskatoon,  
Saskatchewan S7S 1E6 (CA). MAENZ, David, D.

[CA/CA]; 316 Hugo Avenue, Saskatoon, Saskatchewan  
S7N 1J8 (CA). CLASSEN, Henry, L. [CA/CA]; 235  
Sylvian Crescent, Saskatoon, Saskatchewan S7H 5G1  
(CA).

(74) Agent: BLAKE, CASSELS & GRAYDON LLP; World  
Exchange Plaza, 20th Floor, 45 O'Connor Street, Ottawa,  
Ontario K1P 1A4 (CA).

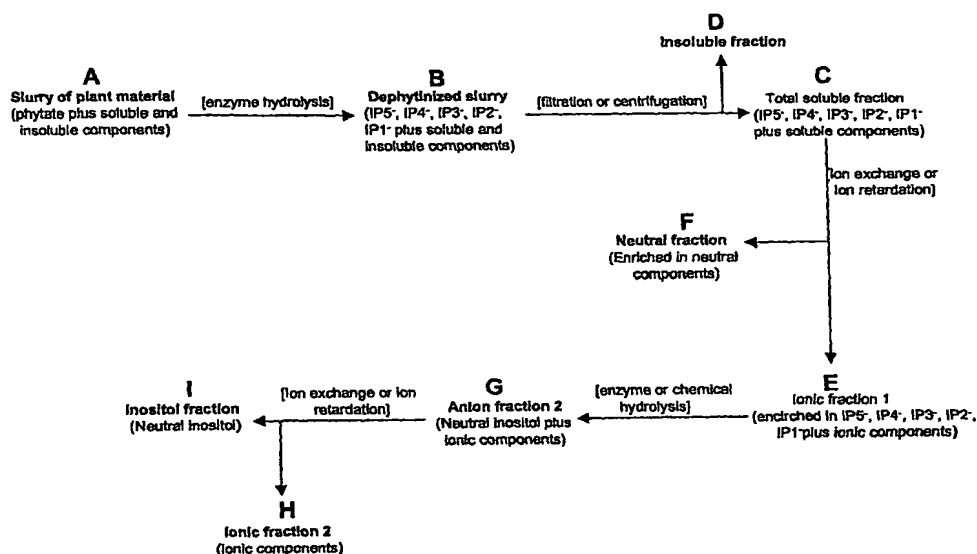
(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ISOLATION OF INOSITOL FROM PLANT MATERIALS

# Purification of inositol from plant materials



(57) Abstract: Phytate and/or phytin and/or phytic acid in an aqueous slurry of plant material is partially hydrolyzed by incubating the slurry with an enzyme product enriched in phytase. The soluble fraction of the slurry is separated into anionic and neutral fractions. The anionic fraction is then hydrolyzed further, and the hydrolyzate is separated into second ionic and neutral fractions. The second neutral fraction thus obtained is rich in inositol, and does not contain significant quantities of other sugars which would be hard to separate from it.



**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

23 September 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CA 03/01849

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 C12P7/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C12P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, BIOSIS, EMBASE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 156 563 A (KAMPEN WILLEM H) 5 December 2000 (2000-12-05) see especially col. 3 and the claims the whole document	1-11
X	PATENT ABSTRACTS OF JAPAN vol. 0172, no. 36 (C-1057), 13 May 1993 (1993-05-13) - & JP 04 365489 A (MITSUI TOATSU CHEM INC), 17 December 1992 (1992-12-17) the whole document - / - -	1-11

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \* & \* document member of the same patent family

Date of the actual completion of the international search

12 March 2004

Date of mailing of the international search report

03/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Douschan, K

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01849

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KAUFMAN H. W. AND KLEINBERG I.: "Hydrolysis of Phytate and its Inositol Phosphate Intermediates by an Acid and an Alkaline Phosphatase." ARCHS ORAL BIOL., vol. 20, 1975, pages 157-160, XP000902746 the whole document	1-11
A	--- LIM P E ET AL: "THE PHYTASES II. PROPERTIES OF PHYTASE REACTIONS F1 AND F2 FROM WHEAT BRAN AND THE MYO-INOSITOL PHOSPHATES PRODUCED BY FRACTION F2" BIOCHIMICA ET BIOPHYSICA ACTA, AMSTERDAM, NL, vol. 302, no. 2 E43, 1973, pages 316-328, XP000972485 ISSN: 0006-3002 the whole document	1-11
A,P	--- MULLANEY E J ET AL: "The term phytase comprises several different classes of enzymes" BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, ACADEMIC PRESS INC. ORLANDO, FL, US, vol. 312, no. 1, 5 December 2003 (2003-12-05), pages 179-184, XP004473248 ISSN: 0006-291X the whole document	1-11
A	--- DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; 1998 PIZZOFERRATO, L. ET AL PIZZOFERRATO, L. ET AL: "31P NMR spectra of myo- inositol phosphates in model systems and foods 31P NMR spectra of myo- inositol phosphates in model systems and foods" Database accession no. 1998:145617 XP000227293 abstract & CURRENT STATUS AND FUTURE TRENDS IN ANALYTICAL FOOD CHEMISTRY, PROCEEDINGS OF THE EUROPEAN CONFERENCE ON FOOD CHEMISTRY, 8TH, VIENNA, SEPT. 18-20, 1995, VOLUME 3, 644-647. EDITOR(S): SONTAG, GERHARD; PFANNHAUSER, WERNER. PUBLISHER: AUSTRIAN CHEMICA, 1995,	1-11
	--- -/--	

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CA 03/01849

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	<p>CHEN Q-C ET AL: "Separation of phytic acid and other related inositol phosphates by high-performance ion chromatography and its applications"</p> <p>JOURNAL OF CHROMATOGRAPHY A, ELSEVIER SCIENCE, NL, vol. 1018, no. 1, 7 November 2003 (2003-11-07), pages 41-52, XP004463107 ISSN: 0021-9673 the whole document</p> <p>-----</p>	1-11

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 03/01849

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6156563	A	05-12-2000	NONE	
JP 04365489	A	17-12-1992	NONE	